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ABSTRACT

The report examines employment service issues related to assisting persons who have suffered traumatic brain injury to re-enter the labor force and maintain their employment. An interdisciplinary team treatment approach is recommended and the roles of each of the following professionals are summarized: employment specialist, neuropsychologist, neurosurgeon, nurse, physiatrist, occupational therapist, physical therapist, social worker, and speech pathologist. Particular attention is given to the role of the employment specialist in the supported employment setting. Compensatory strategies on the job site are listed and include using lists to compensate for memory problems, structuring the environment to enhance functioning, and using individualized auditory or visual cues. Two case studies demonstrate application of rehabilitation principles. A final section notes the high incidence of alcohol abuse in this population and encourages further research and attention to rehabilitation needs. Ten references complete the report. (DB)

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SPECIAL ISSUE

VOLUME 5, NUMBER 1

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RETURN TO WORK FOLLOWING TRAUMATIC BRAIN INJURY

Presented jointly by the
Virginia Commonwealth University
Rehabilitation Research and Training Centers
on Supported Employment and Traumatic Brain Injury
& the Supported Competitive Employment Project
for Individuals with Traumatic Brain Injury

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Approximately 440,000 cases of traumatic brain injury occur annually in the United States. Returning to work following a brain injury is almost always a difficult task. The significant physical, neurological, cognitive, and often personality changes that occur usually affect the type of job for which a person can qualify, as well as the level of employment stability demonstrated. It is well documented that *reentry into the labor force*, especially into a similar job, and *maintaining employment* are serious problems for many individuals with traumatic brain injuries.

In one recent review of 98 severe head injury cases in Glasgow, Scotland, it was found that a pre-injury employment rate of 86% dropped to 29% after injury. Data from other researchers in New York and Maryland support this decline in employment following injury. One study investigated the effects of cognitive rehabilitation training: limited change was found in employment outcome between subjects receiving this training versus no training.

Traditionally, vocational rehabilitation has served the person with a traumatic brain injury in the following way. Individuals are referred for service, evaluated vocationally, and recommended for work adjustment, skills training, and sometimes cognitive rehabilitation therapy. Finally, if all goes well, they are placed into jobs. However, many workers have had difficulty in maintaining employment due to social, cognitive, or physical problems.

One alternative rehabilitation model gaining attention for individuals with traumatic brain injuries is supported employment. Supported employment provides services at the job site where the individual is employed. The staff person who provides this support is called a job coach or employment specialist. Supported employment minimizes or reduces time spent in helping individuals "get ready" for work by providing on-site staff support as a part of paid employment opportunities. This approach guarantees to the employer that the job will get done even if the employment specialist must initially do some of the work.

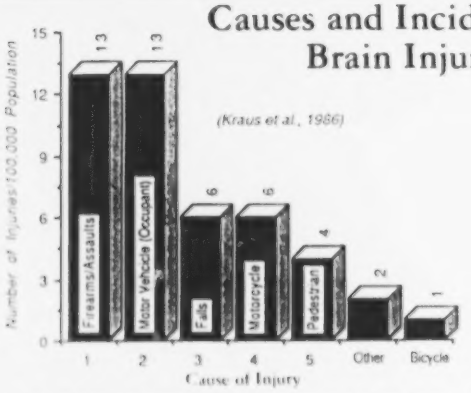
The supported employment approach is aimed at persons with severe disabilities who need specialized job placement and retention services. Supported employment has been used very successfully, for example, with individuals with moderate and severe mental retardation who did not benefit from the traditional placement approaches of vocational rehabilitation. In the same way, individuals with severe head injuries are typically unlikely to gain or hold employment without ongoing professional help delivered to them directly at the job site.

Due to the complex problems families face in coping with a family member who has a brain injury, a national network of local and state head injury chapters has sprung up in recent years. This network focuses on helping families deal with the burden of long-term care and financial support, and most of the state chapters are very active in promoting meaningful return to work activity.

The National Head Injury Foundation has signed key cooperative agreements with the Rehabilitative Services Administration to promote greater employment opportunities for individuals with traumatic brain injuries. Also, the U.S. Department of Education, Office of Special Education and Rehabilitative Services, has made the availability of model services to persons with traumatic brain injury a major priority within the past three years.

This special report presents information related to employment services for persons with traumatic brain injuries. The report is a joint effort between two federally funded Rehabilitation Research and Training Centers located at Virginia Commonwealth University, one devoted exclusively to supported employment and the other focusing on traumatic brain injury.

Causes and Incidence of Brain Injury



Traumatic brain injury is caused by gunshot wounds, physical assaults, and car accidents. Falls, bicycle and motorcycle accidents, and incidents in which pedestrians are hit by motor vehicles also contribute to the number of brain injuries each year.

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Point of View

I am the parent of a young adult with a traumatic brain injury. When my son was injured 12 years ago, we were sent home from the hospital with "Good luck" as the only parting advice. We were not told what to expect for our son regarding employment options or where to seek assistance of any kind.

In my opinion, supported employment is one of the services most needed by persons with traumatic brain injuries. This group of persons with disabilities is definitely discriminated against in terms of unavailability of appropriate services. Supported employment may actually be the first service that the individual and family utilize following acute care and discharge from the hospital. With that in mind, the supported employment specialist certainly becomes an important focal point in the lives of families who have a member with a traumatic brain injury.

Although I believe that employment specialists should become educated about traumatic brain injury, I encourage you not to feel that you must know everything about traumatic brain injury or have a lot of experience before you can be effective as an employment specialist assisting persons with traumatic brain injuries. It is a matter of having the right mix of knowledge, concern, and common sense.

What I have learned from my son and from others with traumatic brain injuries is that although there are many shared characteristics, each injury is unique, just as each person is unique. Therefore, get to know the individual with whom you will be working. Try to problem-solve with the person to find out what his or her concerns and preferences are regarding employment. Always test your communication so that you are sure you understand what the person with a traumatic brain injury means and that you are understood also. Learn about the things that might be significant on the job, such as short-term memory loss, attention or language deficits, the need to simplify instructions or write things down, the need for structure and limits, and physical disability.

Above all, I would like to convey to employment specialists that sensitivity is critical to working successfully with individuals with traumatic brain injuries and their families. It is sometimes hard to remember--particularly if an individual shows no outward physical disability--that a person with a brain injury has suffered a *physical injury* that may cause difficulty in reading social cues and an inability to control emotions or verbal interactions. Issues surrounding self-esteem are important; there has usually been a loss of self-esteem and control over one's life and decisions following a brain injury. There is a real need to feel a sense of control and belonging. A job usually represents both of these for the person with a traumatic brain injury.

Your most important resources as an employment specialist are basic information about traumatic brain injury, help from experienced professionals, your own sensitivity and judgment, and input from the person with a traumatic brain injury and his or her family. Parents and families have had to struggle for a long time to find effective ways of dealing with their loved one who has a brain injury; it is extremely important that we are included as a vital part of the supported employment team. Supported employment for persons who have traumatic brain injuries is desperately needed and very, very important to the individuals who want to work and to their families.

Carol Tarkington

Carol Tarkington
Parent

Using the Interdisciplinary Treatment Team Approach

Practitioners have found that the most effective way to accomplish treatment goals for persons with traumatic brain injuries is to use an interdisciplinary team approach. Members of the team work together, communicate frequently, and set mutual treatment goals for recovery. An advantage of the team approach is that each member has a unique set of skills to contribute to the treatment plan. The individual and family are an important part of the team. Team composition varies depending on the particular needs and phase of recovery.

The following is a brief description of each member of the treatment team who is involved in assisting an individual with a traumatic brain injury to regain the ability to function as independently as possible.

■ Employment Specialist

The employment specialist, who is knowledgeable about the employment challenges of individuals with traumatic brain injuries, provides specialized assistance in locating, learning, and keeping a job. The employment specialist also communicates with the employer, the worker, and the family regarding job-related concerns.

■ Neuropsychologist

The neuropsychologist understands how problems with the brain and nervous system affect emotions and intelligence. The neuropsychologist performs an evaluation to diagnose emotional problems as well as intellectual problems involving memory, learning ability, and arithmetic reasoning. Special therapy is provided to help the individual compensate for intellectual problems, and counseling is often made available to the individual and the family.

■ Neurosurgeon

The neurosurgeon specializes in problems of the brain and spinal cord. Typically, the neurosurgeon coordinates medical care in the early stages following injury.

makes a decision regarding the necessity for surgery, and monitors recovery. The neurosurgeon provides treatment for seizures that may often accompany head injury, as well as documentation for medical disability claims. The neurosurgeon's role in rehabilitation is likely to be minimal after the person is discharged from the hospital.

■ Nurse

The nurse is responsible for carrying out the physician's orders and managing the patient's day-to-day medical care. The nurse educates families regarding medical care, condition, and prognosis. In the early stages of injury, the nurse is primarily involved in maintaining and improving the individual's medical condition; in later stages, the nurse is more likely to assist the individual in carrying out daily living activities, as well as various therapies.

■ Physiatrist

The physiatrist is a physician who specializes in the field of rehabilitation. This individual typically has primary responsibility for managing the individual's day-to-day care after discharge from neurosurgical care. The physiatrist often prescribes rehabilitation treatments including physical, occupational, and speech therapies.

■ Occupational Therapist

The occupational therapist is a specially trained professional involved in helping individuals regain their ability to carry out activities of daily living. Therapeutic exercises provided by the occupational therapist improve strength and coordination skills required for eating, dressing, toileting, and bathing.

■ Physical Therapist

The physical therapist is a professional who is specially trained in understanding how muscles work. Exercise and instruction by the physical therapist help improve control over muscles with the goal of increased ability to walk, stand, and sit properly. Wheelchair use and transfer skills are taught if necessary. The physical therapist also works with comatose individuals to reduce muscle stiffness.

■ Social Worker

The social worker is trained to recognize an individual's financial and daily living needs. The social worker is likely to be involved in arranging for insurance coverage and placement for the individual after discharge. The social worker may also be involved in educating, counseling, and communicating with family members.

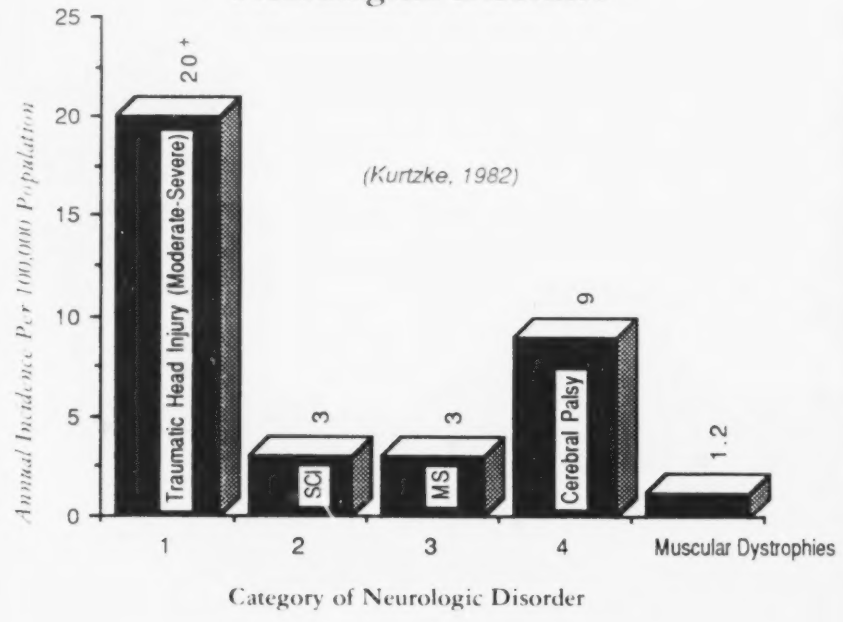
■ Speech Pathologist

The speech pathologist has special knowledge regarding communication and language and helps with basic problems in oral comprehension and expression. The speech pathologist may teach exercises for muscles of the mouth and tongue for better control in speech and eating. The speech pathologist will teach the use of adaptive devices if the individual is unable to communicate orally.

Characteristics of Traumatic Brain Injury

Traumatic brain injury often results in a myriad of cognitive, behavioral, and physical disabilities. Cognitive disabilities can include varying degrees of short-term memory loss, difficulty in concentrating, problems in processing abstract information, poor retrieval of stored information, and impaired processing in planning, initiating, and carrying out actions. Physical and sensory disabilities can include impairments in speech, vision, hearing, fine and gross motor skills, and balance. Behavioral and emotional difficulties can result from a combination of specific neurological damage and feelings of frustration or being overwhelmed by the inability to cope with the effects of the traumatic brain injury.

Relative Incidence of TBI and Other Neurological Disorders



Traumatic brain injury occurs at a much higher rate than many other kinds of disorders that affect the brain and nervous system. The annual incidence of moderate/severe brain injury is more than that for spinal cord injury (SCI), multiple sclerosis (MS), cerebral palsy, and muscular dystrophy *combined*.

The Role of the Employment Specialist in Helping Persons with Traumatic Brain Injuries Return to Work

Job coach. Job trainer. Employment counselor. These terms are often used interchangeably to describe the multifaceted work of a supported employment specialist. Employment specialists are professionals or paraprofessionals experienced in the fields of special education, rehabilitation counseling, psychology, and/or business and industry. In assisting persons with traumatic brain injuries to return to work, the employment specialist takes on a variety of roles, responding to the skills and support needs of the individual during each component of the supported employment process.

During the first phase of supported employment services, called *consumer assessment*, the employment specialist gathers information from various sources about consumers who have been referred to the supported employment program. A home visit is scheduled as one part of the assessment process to allow the employment specialist to explain the type of service being offered and what can be expected from participation in a supported employment program. In addition, the home visit is an opportunity to learn about a consumer's vocational interests and abilities, as well as to obtain valuable insight into the dynamics of the family system.

Information from neuropsychological evaluations, supported employment questionnaires, and medical, psychological, educational, and past employment records is utilized in order to gain a complete picture. State rehabilitation counselors play an important role, often providing the employment specialist with additional information and insights about a consumer's interests, abilities, personalities, and learning potential. The information collected is analyzed to determine a direction for job development.

Job development, the second component of supported employment, entails identifying appropriate employment opportunities, an activity which occurs simultaneously with consumer assessment. The employment specialist looks for jobs that match consumers in terms of interests and abilities. Job openings are identified through state and local government listings, agencies such as vocational rehabilitation and state employment commissions, university career planning and placement offices, the classified section of the newspaper, "help wanted" signs, and "cold calls."

When a potential job is identified, the employment specialist contacts the employer for an appointment. The presentation to the employer sets the tone for all future communication and is made with two major goals in mind: 1) to explain the advantages of the supported employment program for the employer, and 2) to identify appropriate job openings within the company.

"The employment specialist remains on the job site until the worker is performing to company standards."

As the supported employment model is explained, particular emphasis is given to the one-to-one job site intervention, which assures that 100 percent of the job is completed from the very first day. The employment specialist also describes the characteristics of workers with traumatic brain injury, avoiding rehabilitation lingo and utilizing functional descriptions.

The employment specialist assures the employer that he or she will remain on the job site until the work is being performed to company standards. When the individual completes job duties independently, the employment specialist explains that he or she will slowly fade from the job site, allowing the employer to feel comfortable taking over full responsibility.

The employment specialist explains to the employer and the consumer that he or she will remain in contact for as long as the individual is employed to insure that both their needs are being met. The employer should be told that additional job-site intervention will be provided, if needed, at any time.

If an appropriate job opening exists, the employment specialist next observes or even "shadows" an employee working in that position so that the specific requirements of the job can be analyzed. Jobs are assessed in terms of such factors as productivity, endurance, strength, appearance, physical mobility, and communication skills. The aim of a job analysis is to collect detailed information about the job that can be used, along with consumer assessment information, to make a placement decision.

One method of identifying candidates for a job is to use a procedure called a "compatibility analysis," which integrates and compares consumer assessment and job analysis information. As part of the compatibility analysis, the employment specialist refers to the neuropsychological report, vocational evaluation, and previous educational or work history to assist in the decision-making process.

If the individual who is judged to be a good match for the job is interested in the position, the employment specialist arranges a job interview. The employment specialist participates in order to provide support to the consumer and to clarify the role of supported employment services in the job placement.

Once the individual is hired, the employment specialist makes all the necessary arrangements, including coordinating transportation, notifying the Social Security office, and obtaining the necessary paperwork for the Targeted Jobs Tax Credit (TJTC).

As the employment specialist moves into the next phase of supported employment, *job-site training*, the focus is on providing job skill training and support to the new employee. A task analysis is written to reflect the most efficient way

for the worker to perform the job and serves as a guideline for training a particular job skill. Consistent prompts and natural cues, individualized to the learning needs and style of the worker, should be used.

The employment specialist also spends time designing, creating, and implementing job-site adaptations and modifications (see section on Compensatory Strategies). This involves input from the worker, colleagues, and, at times, the expertise of an occupational therapist or rehabilitation engineer. Sometimes the employer or the coworkers know ways of doing a job more quickly or efficiently. They may also reveal valuable inside information (e.g., tricks of the trade, sanctioned shortcuts). Often, many different adaptations are implemented before the optimal one is identified.

The employment specialist facilitates social communication among the worker, the supervisor, and coworkers, and promotes social opportunities. The employment specialist also models appropriate interactions between coworkers and the new employee. This *advocacy* role extends from pre-placement activities throughout the ongoing assessment and follow-along stages of an individual's employment.

The final phase of the supported employment model is *ongoing assessment and follow-along*. As a proactive measure, the employment specialist monitors work performance throughout the period of employment. This is done through data that are collected during periodic job-site visits and through written supervisor evaluations that assess job performance. Workers also fill out a self-evaluation form that provides the employment specialist with insight into the individual's perception of current job performance.

Finally, throughout the duration of the supported employment relationship, the employment specialist directs the consumer to a variety of resources, such as housing, transportation, reassessment of Social Security benefits, substance abuse treatment (see section on Alcohol and Traumatic Brain Injury), marital and/or individual counseling, support groups for persons with traumatic brain injuries, and social/recreational programs, as indicated.

In providing supported employment services to individuals with traumatic brain injuries, the employment specialist functions in a number of roles. Along with job site support and training, another role is that of a case manager. As a case manager, the employment specialist continually monitors and assesses an individual's employment situation and corresponding needs. Knowing how to respond effectively in a given situation is critical to a successful employment outcome. Therein lies the key to the employment specialist's role in helping persons with traumatic brain injuries return to work.

Compensatory Strategies on the Job Site

Compensatory strategies are effective techniques for teaching individuals with traumatic brain injuries to regain functional skills for living and working more efficiently. Compensatory strategies consist of external and internal aids used to accomplish specific tasks. External aids are objects such as watches, grocery lists, alarm clocks, or appointment books that assist people with remembering and organizing their environment. Internal aids include techniques such as mental rehearsal, visual images, or mnemonics to assist with memory or the comprehension of more abstract concepts. Techniques such as personalized checklists and schedules ensure routine and minimize the effects of memory and attention deficits.

To increase their effectiveness, compensatory strategies must be functional and unobtrusive in the work setting, and they should be developed in conjunction with family members and the individual who will be using them. Because they know about compensatory strategies that have been used successfully in the home, family members are especially resourceful. As people with traumatic brain injuries return to employment, their independence and productivity can be greatly enhanced through the development of effective compensatory strategies and physical adaptations.

Here is a sample of compensatory strategies used in employment settings to foster independence:*

1) ***Use lists to compensate for memory problems.*** Information can be written down using a pocket notebook or an appointment book, or by posting lists where a particular task or behavior is to occur. Checklists can remind a person that certain activities have been completed.

2) ***Use individualized auditory or visual cues.*** Tape recorded messages or instructions are excellent auditory cues. Use different colored containers as visual cues for specific items.

3) ***Structure the environment to enhance functioning.*** Accommodate endurance level and ability to tolerate stress by sequencing tasks, such as scheduling more difficult tasks first to alleviate fatigue. Change the environment , if possible, to decrease stress resulting from excessive noise or temperatures.

4) ***Use physical adaptations.*** Use trays or jigs to keep materials in place and improve work speed. Materials such as electric staplers, rubber band holders, rubber finger tips, laminated work materials, and dycem matting increase work efficiency.

5) ***Rearrange the immediate work area.*** To save time, reduce confusion, and compensate for specific deficits, arrange the work space, the sequence of job tasks, and the overall work day so that the majority of time on the job is productive. For example, place work materials on the left if problems exist with the right visual field, situate an individual apart from other workers if distractibility is a concern.

Case Study #1

Introduction

Allen is a 33-year-old man who experienced a traumatic brain injury as a result of a serious car accident in December 1984. He was in a coma for over two months, with full hospitalization in excess of four months. Since the head injury, Allen walks with a leg brace and cane and shows static nerve palsy in the right leg. He has right-hand ataxia and visual impairment in the left eye.

Prior to his injury, Allen worked as a maintenance assistant, spray painter, and animal care attendant for varying lengths of time. During a three-year period in the Marine Corps, he performed clerical work.

Allen indicated a desire for a full-time office job, based on his previous clerical experience. A neuropsychological report recommended a desk job which involved calculator skills.

A 40-hour per week job as a microfilm processor at a large electronics retailer was located. The job consisted of two major tasks: processing expense and merchandise checks and microfilming documents.

Allen learned all of the steps in the processing portion of his job within 30 days. Initially there were 30 to 40 quality control checks per hour by the employment specialist. A level of 98-100% accuracy was established. In the microfilming area, accuracy levels exceeded 85% after one month; after three months, Allen was completing 250-300 units per day with 99% accuracy.

Discussion

During the first four months of Allen's employment numerous problems occurred. These included forgetting the steps involved in the job; slow production rate; difficulty in operating the equipment; and sequencing and addition errors. The following job modifications and adaptations helped to improve the speed and quality of Allen's job performance:

1. the work table was elevated using two wooden 2 X 4's;
2. written notes were posted as visual cues;
3. pen caps were placed on the switches of the microfilm machine to prevent incorrect hitting;
4. large paper clips were substituted for small ones;
5. an electric stapler replaced the manual one; and
6. plexiglas file dividers, rather than cardboard, were used.

There were off-site problems as well, notably periodic drinking binges and chronic poor nutrition. Budgeting was also a persistent concern. Many hours of intervention time, away from the job site, were devoted to addressing these problems.

A total of 712 staff hours have been spent with Allen, both on and off the job site. There was a heavy involvement of staff time during the initial months, with a major reduction as Allen became increasingly independent and competent on the job. One month after Allen was hired, the company upgraded his status from trial to permanent worker; his hourly wage also increased from $4.50 to $5.00 per hour with full fringe benefits.

Allen continues to work a 40-hour week with opportunities for overtime. He has been employed for almost two years. As a result of his job, Allen was able to live independently. He purchased a stereo, a car, and he goes out socially more frequently than he did before he got his job. Allen's work quality remains stable; the employment specialist is on site only during planned periodic visits as part of follow-along services.

Case Study #2

Introduction

Cal is a 32-year-old man who experienced a traumatic brain injury in October 1981 as a result of falling asleep in his car while driving at night. He was not discovered for nearly 12 hours. Cal was in a coma for 21 days. Following his injury, Cal has decreased short-term memory, difficulty following instructions, poor concentration, occasional confusion, and reduced physical mobility on the left side.

Prior to the accident, Cal, who graduated from college with a degree in journalism, was employed as a sportswriter for a local newspaper. Nine months after his injury, Cal returned to his former job, but he was terminated within six months due to his inability to meet story deadlines.

Cal then attended a state residential rehabilitation center and received certification as an office helper. He became employed in a mail processing position, but left the job one month later because he could not meet the productivity standards. Cal was unable to locate employment on his own and for two years worked as a volunteer at an outpatient rehabilitation center as a physical therapy aide.

A position as an activities aide at a convalescent center became available. The job was 20 hours per week at $3.55 per hour. Job duties involved one-to-one visitations with residents unable to leave their rooms independently. The job also required documentation of these visits on a patient interaction report for Medicare purposes.

Cal's interest in working with people, his good communication skills, and his preference for nonrepetitive work made him a good candidate for the position. In addition, the job duties would place minimal demands on his visual/motor skills, and the working environment was fairly quiet, which would increase Cal's ability to concentrate on job tasks.

Discussion

The employment specialist played a major role in structuring and organizing the visitation schedule and the documentation procedures, which enabled Cal to perform his job duties independently. The employment specialist also modeled appropriate ways to interact with residents during room visits and provided Cal with feedback on his performance.

Total staff intervention time has been 234 hours to date. The employment specialist contacts Cal and/or the employer twice a month to ensure that the job is being completed to the employer's satisfaction. Cal, the employment specialist, and the activities director meet quarterly to update the visitation schedule. Cal has

been employed for 20 months, and he expresses a strong desire to continue working in this field. Cal hopes to obtain a full-time position in the future.

Alcohol and Traumatic Brain Injury

Studies show that at the time of a traumatic brain injury, as many as 50%–70% of persons are legally intoxicated. Other studies have indicated that approximately one-third of persons with traumatic brain injuries has had substance abuse problems prior to the injury. A recent survey conducted by the Medical College of Virginia indicates that across all levels of traumatic brain injury, approximately 10% of the individuals were considered problem drinkers at a mean recovery period of 18 months post-injury.

Post-injury alcohol consumption has not yet been widely researched, and few physicians or other professionals attend to alcohol use post-injury. It is hoped that as professionals begin to study and understand the problems associated with alcohol and other drug use by persons with traumatic brain injuries, they will routinely recommend abstinence.

In the meantime, emerging studies show that alcohol consumption following a traumatic brain injury may be as serious and as significant a problem as the brain injury itself. Due to physical, cognitive, behavioral, and emotional changes, the tolerance for alcohol decreases following a brain injury. As a consequence, moderate use pre-injury may become abuse post-injury. Early detection of alcohol or other drug abuse, with resulting intervention and treatment, is essential to an effective recovery that includes supported employment services.

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The Supported Competitive Employment Project for Individuals with Traumatic Brain Injuries, located at the Virginia Commonwealth University Rehabilitation Research and Training Center on Supported Employment, is a three-year federal demonstration project to explore the efficacy of a supported competitive employment approach for persons with traumatic brain injuries. The project provides direct job placement, job site training, and follow-along services for adults with traumatic brain injuries who have been unable to gain and/or retain employment. Project staff serve adults in the Richmond and Tidewater metropolitan areas and work closely with the Virginia Department of Rehabilitative Services and the Virginia Head Injury Foundation.

The Traumatic Brain Injury Rehabilitation Research and Training Center of the Medical College of Virginia, Virginia Commonwealth University, provides a model system for delivery of medical and rehabilitation services to individuals who have sustained a brain injury and to their families. Seven research projects focus on coma, metabolic response and nutrition, family function, supported employment, biochemical assessment of cerebral spinal fluid, rate of forgetting, and academic intervention in children with brain injury.

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